REMARKS

In the Office Action dated January 30, 2006, Claims 1-39 are pending. The Examiner has made the restriction requirement final. Claims 2, 4, 6, 10-17, 21, 24-39 are withdrawn from further consideration. The Examiner has joined the species of hybridoma 20F8 to the species of hybridoma 16H2 for examination. Claims 1, 3, 5, 7-9, 18, 19-20, 22-23 with the species mammary cells are examined on the merits. The Examiner alleges that Applicants have not filed a certified copy of the foreign priority application PR7618/01 as required by 35 U.S.C. §119(b). Claims 18 and 23 are rejected under 35 U.S.C. §112, second paragraph, as allegedly indefinite. With respect to the deposit of hybridoma cell lines 16H2 and 20F8, the Examiner has rejected Claims 18, 20, and 23 under 35 U.S.C. §112, first paragraph, as allegedly lacking enabling support. The Examiner further objects to the specification under 35 U.S.C. §112, first paragraph, as allegedly lacking descriptive support. Claims 1, 3, 18 and 23 are rejected under 35 U.S.C. §112, first paragraph, as allegedly lacking enabling support. Claims 1, 3, 5, 7-9, 18-20, 22-23 are rejected under 35 U.S.C. §102(a) as allegedly anticipated by Visvader et al. (*PNAS*, 98:14452-57 (2001)).

This Response addresses each of the Examiner's objections and rejections. Applicants therefore respectfully submit that the present application is in condition for allowance. Favorable consideration of all pending claims is therefore respectfully requested.

Applicants note that the Examiner has made the restriction requirement final. However, Applicants respectfully submit that it is improper to restrict the present invention based on differences in the techniques by which the diagnostic method is performed. Applicants request that the Examiner reconsider the restriction and rejoin Groups I and II.

In addition, Applicants respectfully direct the Examiner's attention to Claim 6, which depends from Claim 5 and recites the most preferred cancers in the context of which the diagnostic method is performed. Applicants observe that the Examiner had grouped Claim 6 in Group I in an earlier Official Action dated May 23, 2005. Thus, Applicants respectfully request that at least Claim 6 should be considered together with Claim 5 and regrouped in Group I.

The Examiner acknowledges Applicants' claim for foreign priority that is based on an application filed in Australia on September 12, 2001 (PR7618/01). However, the Examiner alleges that Applicants have not filed a certified copy of the PR7618/01 as required by 35 U.S.C. §119(b).

Applicants submit that the present application entered the national stage from an international application after compliance with 35 U.S.C. 371. Thus, the claim for priority would be satisfied when the claim is made during the pendency of the application and within the time set by the PCT and the Regulations under the PCT. In this regard, Applicants respectfully submit that the Australian Patent Office forwarded a copy of PR7618/01 to the International Bureau shortly after the corresponding PCT application was filed. For the Examiner's convenience, Applicants enclose a copy of documentation received from the International Bureau acknowledging receipt of the certified copy of PR7618/01 **(Exhibit A)**. Applicants have also ordered a certified copy of the provisional application and will file it in due course when it is available.

Accordingly, the requirement under 35 U.S.C. § 119(b) is satisfied and withdrawal of the objection is respectfully requested.

Claims 18 and 23 are rejected under 35 U.S.C. §112, second paragraph, as allegedly indefinite.

The Examiner alleges that Claims 18 and 23 are indefinite because the terms "derived from" and "derived parts" in the claims are not clear. The Examiner alleges that it is not clear that the term "derived from" or "derived part" means "obtained from" or "obtained parts."

Applicants observe that the terms "derived from" and "derived part" are commonly used in the art. The terms "derived from" or "derived part" is meant that the molecule in issue has originated from the other specified molecule but has not necessarily been obtained directly from the specified source. Accordingly, the term "derived from" or "derived part" has a different meaning than the term "obtained from" or "obtained parts". Thus, the terms "derived from" and "derived part" are clear and definite to one skilled in the art. Withdrawal of rejection of Claims 18 and 23 under 35 U.S.C. §112, second paragraph, is respectfully requested.

With respect to the deposit of hybridoma cell lines 16H2 and 20F8, the Examiner rejects Claims 18, 20, and 23 under 35 U.S.C. §112, first paragraph, as allegedly lacking enabling support. The Examiner further objects to the specification under 35 U.S.C. §112, first paragraph, as allegedly lacking descriptive support. The Examiner alleges that there is no evidence either that the claimed biological materials are known and readily available to the public; or that there is complete evidence of the deposit of the biological materials.

Applicants submit that these rejections and objections can be overcome by making a deposit of the hybridoma cell lines, submitting a certification stating that the deposit has been made and verifying the viability of the deposited materials.

Applicants respectfully submit that the paragraph at page 29, lines 24-25 of the specification as originally filed, provides the information regarding deposition of the hybridoma cell lines with the European Collection of Cell Cultures (ECACC), Salisbury, Wiltshire SP4 0JG, UK, which produce 16H2 and 20F8, respectively. Applicants have hereby amended the

specification at page 29, lines 24-25 to insert the deposit date and the ECACC deposit reference numbers for these cell lines. The amendment in the specification merely updates the information of the deposit status. No new matter is introduced. Copies of the receipts of the ECACC deposit are enclosed herewith (as **Exhibits B and C**).

Applicants further submit that all restrictions on availability of said hybridomas to the public will be irrevocably removed upon the granting of the patent based upon the captioned application and said hybridomas will remain permanently available for a term of at least 5 years after the most recent request for the furnishing of a sample, and in any case, for a period of at least 30 years after the date of deposit or for the enforceable life of the U.S. patent whichever is longer. In the event that the hybridomas become non-viable or are inadvertently destroyed, such will be replaced with viable hybridomas of the same taxonomic description.

In view of the foregoing, it is respectfully submitted that the rejection of Claims 18, 20, and 23 under 35 U.S.C. §112, first paragraph, and the objection to the specification under 35 U.S.C. §112, first paragraph, are obviated. Withdrawal of the rejection and objection is therefore respectfully requested.

Claims 1, 3, 5, 7-9, 18, 20, 22, and 23 are rejected under 35 U.S.C. §112, first paragraph, as allegedly lacking enabling support.

The Examiner alleges that the specification neither discloses functional or structural attributes of an immunointeractive molecule other than antibodies, nor any other immunointeractive molecule other than an antibody, which are immunointeractive to LM04 and form a complex with LM04. The Examiner alleges that the specification does not provide any method to detect LM04 in a mammary cell or a working example, which enables immunointeractive molecule other than an antibody to detect LM04 in a mammal cell. The

Examiner alleges that one skilled in the art would not know how to use the claimed immunointeractive molecule, other than an antibody, based on the teachings in the prior art or instant specification.

Additionally, the Examiner acknowledges that the specification, on page 32, paragraph 3, discloses that the invention extends to mutants, analogues, and derivatives of the subject antibodies, which still retain specificity for LM04. However, the Examiner alleges that the specification does not teach any working example that identifies a complex formed by the LM04 protein, or a fragment, derivative or variant of LM04 protein, with an antibody secreted by hybridoma 16H2 or hybridoma 20F8 or a mutant or variant thereof. The Examiner alleges that the specification does not provide any teaching of an antibody secreted by hybridoma 16H2 or 20F8, or a mutant or variant thereof, which could form a complex with the LM04 protein or its variant.

In the first instance, Applicants observe that the Examiner's rejection is directed to the term "immunointeractive molecule". In this regard, Applicants respectfully submit that in addition to the disclosure of the specification that a preferred immunointeractive molecule is an antibody; other immunointeractive molecules are also described in the specification, including antibody fragments, single chain antibodies, deimmunized antibodies and T-cell associated antigen-binding molecules (TABMs). See, e.g., the bridging paragraph of pages 21-22.

Applicants respectfully submit that the use of the term "immunointeractive molecule" is clear to one skilled in the art in that the subject molecule is one which interacts with LMO4 on an immunological basis, such as that which occurs with antibody molecules, T cell receptors (including those corresponding to TABMs), humanized antibodies, single chain antibodies and the like. Applicants submit that given an immunointeractive molecule interacts specifically with

LM04 and the above-mentioned immunointeractive molecules are all well known and well defined molecules, those skilled in the art would be able to readily make the immunointeractive molecules which recognize and bind to the epitope of LM04 on the basis of basic immunological principles.

To further delineate the claimed subject matter, Applicants have also added Claim 40, which depends on Claim 1 and recites that an immunointeractive molecule is selected from an antibody, an antigen-binding fragment of an antibody, a single chain antibody, a deimmunized antibody, and a T-cell associated antigen-binding molecule. Support for Claim 40 can be found throughout the specification, e.g., the bridging paragraph of pages 21 and 22. No new matter is introduced.

The Examiner alleges that the specification does not provide any teaching on an antibody secreted by hybridoma 16H2 or 20F8, or any mutant or variant thereof, which could form a complex with the LM04 protein or a fragment, variant or derivative of LM04.

Applicants respectfully disagree with the Examiner's allegation. Applicants observe that the specification provides data showing that the antibodies secreted by hybridoma 16H2 and 20F8 form a complex with the LM04 protein. See Figures 13-15 and the brief description of these Figures on page 15 of the specification. Additionally, Applicants respectfully submit that given the present teaching with respect to the antibodies secreted by hybridomas 16H2 and 20F8, those skilled in the art would be able to readily make antibody fragments, single chain antibodies, and deimmunized antibodies, that would retain the antigen specificity of 16H2 and 20F8.

In an effort to favorably advance prosecution, Applicants have deleted the recitations of "derivatives," "mutants," and "variants." Applicants reserve the right to file a continuation

application directed to the deleted subject matter. Applicants respectfully submit that the specification provides sufficient support for the term "fragments," e.g., on page 33, line 29 to page 34, line 26.

In view of the above, the rejection of Claims 1, 3, 5, 7-9, 18, 20, 22 and 23 under 35 U.S.C. §112, paragraph 1, is overcome and withdrawal thereof is respectfully requested.

Claims 1, 3, 18 and 23 are rejected under 35 U.S.C. §112, first paragraph, as allegedly lacking enabling support.

The Examiner states that Claims 1, 3, 18 and 23 are drawn to a method for detecting an aberrant cell or a predisposition to the development of an aberrant cell in a subject by screening the levels of complex formation between LM04 and a deimmunized antibody wherein at least one of the CDRs of the variable domain of the antibody derives from the monoclonal antibody to LM04. The Examiner alleges that the claims encompass using a monoclonal antibody that does not contain a full set of 6 CDRs.

The Examiner further states that at least one of the CDRs of the variable domain of said deimmunized antibody is derived from the said monoclonal antibody to LM04 and the remaining immunoglobulin-derived parts of the deimmunized antibody molecule are derived from an immunoglobulin or an analogue thereof from the host for which the antibody is to be deimmunized. The Examiner alleges that it is unlikely that the recited deimmunized antibody, which may contain less than the full complement of CDRs from the heavy and light chain variable regions, has the required binding function. The Examiner alleges that Applicants have provided insufficient evidence or nexus that would lead the skilled artisan to predict the ability of using a deimmunized antibody, containing fewer than 6 CDRs, that would result in an antibody that retains the antigen specificity of the parental non-human antibody.

In the first instance, Applicants observe that the Examiner's reasoning for this rejection is not completely clear. In one place, the Examiner states that the claims, as worded, encompass the use of a deimmunized monoclonal antibody that does not contain a full set of 6 CDRs (page 10, first paragraph of the Action). In another place, the Examiner states that the remaining parts of the deimmunized antibody are derived from an immunoglobulin or an analogue thereof from the host (page 10, second paragraph of the Action). The Examiner appears to be concerned that retaining only one CDR of the original monoclonal antibody is insufficient to confer the original antigen-binding capacity and specificity to the resulting deimmunized antibody.

Applicants respectfully submit that it is well acknowledged in the art that a deimmunized antibody must exhibit sufficient CDRs to provide specificity in relation to the epitope which is targeted. Applicants respectfully direct the Examiner's attention to the claims at issue, which specifically recite a functional limitation that the deimmunized antibody must exhibit specificity for the epitope of interest. Applicants submit that the functional limitation would inherently require that sufficient CDRs are derived from the anti-LMO4 antibody to confer epitopic specificity.

As such, the present application provides sufficient description and guidance for one skilled in the art to practice the claimed methods of using deimmunized antibody containing at least one CDR derived from the anti-LMO4 monoclonal antibody. Thus, Applicants submit that the rejection of Claims 1, 3, 18 and 23 under 35 U.S.C. §112, first paragraph, is overcome and withdrawal thereof is respectfully requested.

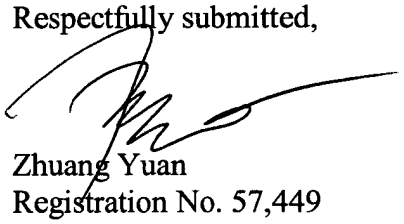
Claims 1, 3, 5, 7-9, 18-20, 22-23 are rejected under 35 U.S.C. §102(a) as allegedly anticipated by Visvader et al. (*PNAS*, 98:14452-57 (2001)).

Applicants observe that the priority application, PR7618/01, was filed in Australia on September 12, 2001, prior to the publication of Visvader et al on December 4, 2001. Applicants also observe that the presently claimed subject matter is fully supported by the priority application. Thus, Applicants submit that the rejection is overcome in view of Applicants' filing of the certified copy of the priority application.

The rejection of Claims 1, 3, 5, 7-9, 18-20, 22-23 under 35 U.S.C. §102(a) as allegedly anticipated by Visvader et al. is overcome and withdrawal thereof is respectfully requested.

In view of the foregoing amendments and remarks, it is firmly believed that the subject application is in condition for allowance, which action is earnestly solicited.

Respectfully submitted,



Zhuang Yuan
Registration No. 57,449

Scully, Scott, Murphy & Presser, P. C.
400 Garden City Plaza-STE 300
Garden City, New York 11530
Telephone: (516) 742-4343
FSD/ZY:ab

Encls.: Exhibits A-C